**19IT41O1 –PYTHON PROGRAMMING**

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| **Course Category:** | Open Elective | **Credits:** | 3 |
| **Course Type:** | Theory | **Lecture -Tutorial-Practical:** | 3-0-0 |
| **Prerequisite:** | Require the fundamental concepts of computers and any programming basics | **Sessional Evaluation:**  **External Evaluation:**  **Total Marks:** | 40  60  100 |

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| **Course**  **Objectives** | Students undergoing this course are expected: | |
| 1. To introduce Object Oriented Programming using an easy to use language 2. To use iterators and generators. 3. To test objects and handle changing requirements. 4. To be exposed to programming over the web to develop various applications. | |
| **Course Outcomes** | Upon successful completion of the course , the students will be able to: | |
| CO1 | Understand the concepts of object oriented programming in python. |
| CO2 | Study to compose a group of characters and utilization of strings into various applications |
| CO3 | Use generators and iterators to develop different applications |
| CO4 | Develop test cases and handle refactoring to identify its advantages. |
| CO5 | Use serializing objects to program over the web. |
| CO6 | Lean how to create and utilize the advantages of packages |
| **Course**  **Content** | **UNIT-I**  **INTRODUCTION:** Function Declaration - Import - Objects - Indenting as Requirement - Exceptions – Unbound Variables - Case Sensitive - Scripts - Native Data Types - Booleans - Numbers - Lists -Tuples - Sets - Dictionaries - Comprehensions - List Comprehensions – Dictionary Comprehensions - Set Comprehensions.  **UNIT-II**  **STRINGS**: Strings - Unicode - Formatting - String Methods - Bytes - Encoding - Regular Expressions Verbose - Case Studies  **UNIT-III**  **CLASSES**: Closures - List of Functions - List of Patterns - File of Patterns - Generators – Defining Classes - Instantiating Classes - Instance Variables - Iterators – Iterators - Assert –Generator Expressions  **UNIT-IV**  **FILES**: Reading and Writing Text Files - Binary Files - Stream Objects - Standard Input, Output and Error.  **UNIT-V**  **XML and SERILIZATION**: XML - Atom Feed - Parsing HTML - Searching for Nodes - html - Generation – Serializing Objects - Pickle Files - Versions - Debugging - Serializing to JSON  **UNIT-VI**  **PACKAGING PYTHON LIBRARIES**: Directory Structure, Writing Your Setup Script - Classifying Your Package - Examples of Good Package Classifiers - Checking Your Setup Script for Errors - Creating a Source Distribution - Creating a Graphical Installer - Building Installable Packages for Other Operating Systems - Adding Your Software to the Python Package Index - The Many Possible Futures of Python Packaging. | |
| **Text Books and Reference Books** | **TEXT BOOKS:**   1. Mark Pilgrim, “Dive into Python 3”, Apress, 2009. 2. Allen Downey, Jeffrey Elkner, Chris Meyers, “How to Think Like a Computer Scientist - Learning with Python”, Green Tea Press, 2002.   **REFERENCE BOOKS:**   1. John V. Guttag, “Introduction to Computation and Programming using Python”, Prentice Hall of India, 2014 2. Mark Lutz, “Learning Python: Powerful Object-Oriented Programming”, Fifth Edition, O’Reilly, Shroff Publishers and Distributors, 2013 | |
| **E-Resources** | 1. <https://nptel.ac.in/courses>  2.<https://freevideolectures.com/university/iitm> | |

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| Contribution of Course Outcomes towards achievement of Program Outcomes | | | | | | | | | | | | | | |
|  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
| CO1 | 3 | 3 | 2 | 2 | 1 | - | - | - | - | - | - | 2 | − | − |
| CO2 | 3 | 3 | 2 | 2 | 1 | - | - | - | - | - | - | 2 | − | − |
| CO3 | 3 | 3 | 3 | 1 | 1 | 1 | - | - | - | 1 | - | 2 | − | − |
| CO4 | 3 | 3 | 2 | 2 | 1 | 1 | - | - | - | 1 | 1 | 2 | − | − |
| CO5 | 3 | 3 | 2 | 2 | 1 | 1 | - | - | - | 1 | 1 | 2 | − | − |
| CO6 | 3 | 3 | 2 | 2 | 1 | - | - | - | - | - | 1 | 2 | − | − |